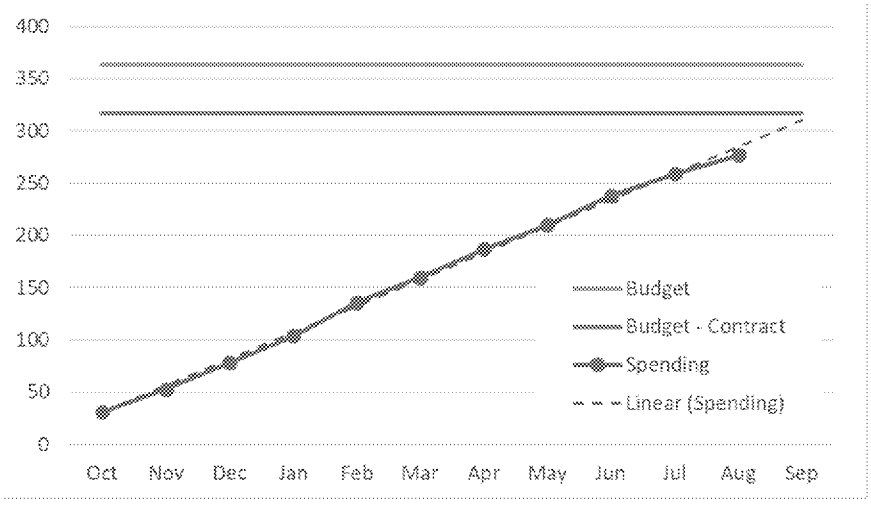
EPA Monthly Report
August 2018

Budget update

- On track: Uncommitted funds should be spent at ~27K per month
- August spending = 18K
- Purdue contract is on track



Project Notes

Past Due Deliverables

- Booster Evaluation Paper – Carl and Kate can prepare this paper for publication but have not dedicated the time needed, what is the priority on this?

Kerberos

- Terra received her Kerberos and it is working.

EWRI, Pittsburg, May 19-23 2019

- Abstracts due Sept 10
- Should we submit abstracts for next year?

Current Work/High Priority Tasks

Note: These tasks differ from the SOW, the following tasks have been agreed upon by EPA and SNL. See description at the end of the report.

Task 1.4: Outreach

Support utilities, universities, industry, and government agencies interested in using WNTR. Deliverables include webinars, analysis, and software development to support this work. Document impact. Publish and present work.

- Report on outreach activities for FY18 was sent to the team

Task 1.5: WNTR Software

Add new features as needed/requested by users. Continue with software releases for major updates along with testing and documentation.

- Code changes in August (checked into USEAP/WNTR)
  - Bug fixes that were identified by users (mainly related to INP files)
  - 0.1.6 release should be tagged this year
- Feature enhancement/To-do list
  - Merge Michaels improvements to the hydraulic model
  - Clean up tests, add Tryby's epanet benchmark nrtests
  - Complete skeletonization code
  - Test pipe break scenarios
  - Add capability to create an HTML map from WaterNetworkModel using Folium
  - Address limitations. High priority items = Multipoint curves
  - Integrate examples into the rst files using doctests. Remove examples folder
  - Convert demos to Jupyter notebooks, then convert the notebooks to rst files and include them in the readthedocs UM, under a Demo section. Users should be able to download the original jupyter notebooks from the github site.
- Plan application with new EPANET GUI / integration of codes
  - No update. WNTR has been integrated into the EPANET GUI

Task 2.1: Sampling optimization

Publish paper on sampling methods and add code/documentation to WST

- Journal article
  - Call on Aug 16th to discuss responses.
  - Terra finish the response and resubmitted the paper for final EPA review 8/28
- Code update
  - Examples run on linux
  - David will run these on windows when WST builds

Task 2.2 Regulatory sampling

Publish paper on regulatory sampling evaluation, share code with EPA, present work

- Journal article (Dan/David)
  - Carl and Dan have been working on the paper
  - Carl will send out the latest version of the paper today (8/13)
  - The paper needs to focus on comparing regulatory and security sampling
  - Call on 9/5
    - In the current case study, regulatory locations are selected using the coverage formulation and node coverage and then evaluated for EC, then security locations are selected using the impact formulation and EC and evaluated for node coverage.
    - The two sets of locations use different scenario sets (regulatory uses trace simulations, security uses 24 hour contamination injection at four times)
    - This set up is good, except Terra would like to use the same time constraint for both regulatory and security. In both cases, we will not assume that sensors are placed for continuous online monitoring.

        - The team discussed the differences and similarities between the sensor placement, coverage, and grab sample methods, when they can be used and under what conditions
    - Dan and Carl were at SNL this week, where we outlined the work and starting working on gathering results.

- Code update (Dan/David)
    - No update…Jon and Terra are testing the code
    - Is this done?

Task 2.4 WST/Canary Software

WST

- Prepare final windows build and move WST source code to GitHub. The built code along with Dakota, coliny, and UM should be posted.
    - David started a private WST repo on GitHub and Kate populated the README page with some basic info and WST publications. We can transfer this to the USEPA GitHub site and make this public when we are happy with the README page. The README page should include:
        - An overview of WST and state that this is a static repo/final version,
        - Link to the UM and windows build hosted on the EPA website,
        - Installation instructions for Linux
        - List of publications
    - As for the windows builds, Dave is making progress. He has a windows machine that has the necessary dependencies and is working on build and environmental variables to make it all work. This will result in a zip file with the executables that can be hosted on the EPA website.
    - Do we need a new cover page for the UM?

Canary

- Move Canary 5 (Java) to GitHub, update Canary 4 (Matlab) with documentation, both on OWA. Canary 5 should go through copyright
    - No update.

GANTT Chart (updated for new FY18 tasks)

Tasks	Deliverables/ Subtasks		SNL Lead	EPA Lead	Status	FY 17												FY 18											
						Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Past due Deliverables	Code	Sampling code	Santiago	Terra																									
	Papers	WNTR User Manual	Kate	Regan																									
		Booster Neu/LR	Kate	Terra					?																				
		EQ resilience	Kate	Regan																									
		UQ sampling	David	Terra																									
		Flushing methods		Terra					?																				
		Flushing/SI		Terra		?																							
	QA plan		Kate	All																									
Resilience WNTR	1.1 Resilience Indicators	NIST workshop	Kate	Regan																									
		EWRI conference	Kate	Regan																									
		USGS workshop	Kate																										
		Journal outlines	Carl	Regan																									
		Code update	Carl	Regan																									
	1.2 Contamination scenarios	Code update	David	Regan																									
	1.3 Pipe breaks	Code update	Kate	Regan																									
	1.4 Outreach	Work with utilities, univ, gov, industry	Kate	Regan																									
		Conf Presentation	Kate	Regan																									
		Journal article	Kate	Regan																									
		Use stats, impact	Kate	Regan																									
	1.5 WNTR software	Software release	Kate	Regan																									
		Documentation	Kate	Regan																									
		Testing	Kate	Regan																									
Response WST	2.1 Sampling optimization	WQTC presentation	David	Terra																									
		Journal article	Carl	Terra																									
	2.2 Regulatory Sampling	Code update	Dan	Terra																									
		Annotated outline	Dan	Terra																									
		Journal article	Dan	Terra																									
	2.4 WST and Canary software	Software release	David	Terra																									
		Documentation	David	Terra																									
		Testing	David	Terra																									

In progress
Complete
Oringinal timeline
Extended/Modified timeline

Subtasks and Deliverables for FY19

Note: These tasks differ from the SOW, the following tasks have been agreed upon by EPA and SNL. Original task for FY17-19 are in FY17, FY18 monthly reports.

Task 1.4: Design

- Removed and replaced with task below

Task 1.4: Outreach

Support utilities, universities, industry, and government agencies interested in using WNTR. Deliverables include webinars, analysis, and software development to support this work. Document impact. Publish and present work. This task includes aspects of Tasks 1.1 (Resilience metrics), 1.2 (Water contamination), and 1.3 (Pipe breaks) completed in FY17.

- Utilities
    - Poughkeepsie (Randy Alstadt)
        - Resilience analysis To Be Determined.
        - Case study report (Regan/Terra lead)
    - Alameda (Steve Peterson)
        - Resilience analysis on HayWired scenario.
        - Develop Opflow article on how to use WNTR for Haywired Scenario (demonstrate WNTR's ability to help utilities to prepare for earthquakes) – would be good to help with discussions with Alameda
    - Las Vegas
        - Black sky case study
- Universities

    - UCLA (Agam Tomar) on case study with Napa
    - Georgia Tech (Iris Tien) on case study for Atlanta
    - North Carolina State Univ (Hana Chmielewski) on dependency model framework
    - University of Illinois (Eun Cha, Roberto Guidotti, Omar Elabd)
- Industry
    - Arcadis (Jim Cooper, Ben Chenevey) help get analysis running with WNTR. Add features for utility models.
    - Citilogic (Jim Uber, Sam Hatchett)
- Government
    - Center for Infrastructure Modeling and Management, EPANET3, plan code integration
    - NIST, IN-CORE
- EWRI (This replaces the conference presentation from Task 1.3)
    - WNTR case studies (Regan)
    - Open source software tools (Kate)
- ACE18
    - Special session Modeling to Support Planning and Response to Disasters (Regan and Kate)
- Journal paper (This replaces the journal article from Task 1.2)
    - Black sky application paper
- Track use stats and update fact sheet
    - Update fact sheet with use cases and capabilities
    - Track use on readthedocs and github

Task 1.5: WNTR Software

Add new features as needed/requested by users. Continue with software releases for major updates along with testing and documentation.

- Feature enhancement/To-do list
    - Clean up tests, add Tryby's epanet benchmark nrtests
    - Replace panels with a dictonary of dataframes
    - Clean up metrics to use new results objects
    - Test pipe break scenarios
    - Add capability to create an HTML map from WaterNetworkModel using Folium
    - Complete skeletonization code
    - Merge Michaels improvements to the hydraulic model
    - Address limitations. High priority items = Multipoint curves
    - Integrate examples into the rst files using doctests. Remove examples folder
    - Convert demos to Jupyter notebooks, then convert the notebooks to rst files and include them in the readthedocs UM, under a Demo section. Users should be able to download the original jupyter notebooks from the github site.

Task 2.1: Sampling optimization

Publish paper on sampling methods and add code/documentation to WST

- Journal article on sampling optimization
- Code update and UM updates for WST

Task 2.2 Regulatory sampling

Publish paper on regulatory sampling evaluation, share code with EPA, present work

- Journal article on regulatory sampling

- Code updates in WNTR/Chama
- EWRI presentation

Task 2.3 Case Studies

- Removed

Task 2.4 WST/Canary Software

- WST release on GitHub
- Canary 4 and 5 release on GitHub